-continued

```
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aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa   4980

aaaaaaaaaa aaaaaaaaaa                                               5000


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<221> NAME/KEY: source
<223> OTHER INFORMATION: /note="Description of Artificial Sequence:
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<221> NAME/KEY: misc_feature
<222> LOCATION: (1)..(400)
<223> OTHER INFORMATION: /note="This sequence may encompass 100-400
      nucleotides"

<400> SEQUENCE: 54

aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa     60

aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa    120

aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa    180

aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa    240

aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa    300

aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa    360

aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa                          400
```

1. A T cell comprising exogenous nucleic acid, wherein:

(a) the nucleic acid comprises a first nucleic acid sequence encoding a chimeric antigen receptor (CAR) comprising an extracellular domain, a transmembrane domain, and an intracellular signaling domain, and

(b) the nucleic acid comprises a second nucleic acid sequence encoding a polypeptide which enhances T cell priming, or a functional fragment or variant thereof, provided that

(i) the first and/or second nucleic acid sequence comprises an RNA; or

(ii) the CAR further comprises a second intracellular signaling domain.

2. The T cell of claim **1**, wherein:

(i) the first and second nucleic acid sequences are disposed on a single nucleic acid molecule,

(ii) the first and second nucleic acid sequences are disposed on a single nucleic acid molecule wherein the nucleic acid molecule comprises an RNA,

(iii) the first and second nucleic acid sequences are disposed on a single nucleic acid molecule,

wherein the single nucleic acid molecule comprises a DNA,

(iv) the first and second nucleic acid sequences are disposed on two or more distinct nucleic acid molecules,

(v) the first and second nucleic acid sequences are disposed on two or more distinct nucleic acid molecules, wherein one or both nucleic acid molecules comprise RNA,

(vi) the first and second nucleic acid sequences are disposed on two or more distinct nucleic acid molecules, wherein one or both nucleic acid molecules comprise DNA, or

(vii) the first and second nucleic acid sequences are disposed on two or more distinct nucleic acid molecules, wherein one nucleic acid molecule comprises an RNA and the other nucleic acid molecule comprises a DNA.

3.-**8**. (canceled)

9. The T cell of claim **1**, wherein:

(i) the CAR comprises one or more costimulatory signaling domains,

(ii) the second intracellular signaling domain comprises a costimulatory signaling domain,

(iii) the intracellular signaling domain comprises a functional signaling domain of CD3 zeta, common FcR gamma (FCER1G), Fc gamma RIIa, FcR beta (Fc Epsilon R1b), CD3 gamma, CD3 delta, CD3 epsilon, CD79a, CD79b, DAP10, and DAP12,

(iv) the intracellular signaling domain comprises a CD3zeta domain and the second intracellular signaling domain comprises a 4-1BB domain,

(v) the transmembrane domain comprises a transmembrane protein of a protein selected from the group consisting of the alpha, beta or zeta chain of the T-cell receptor, CD28, CD3 epsilon, CD45, CD4, CD5, CD8, CD9, CD16, CD22, CD33, CD37, CD64, CD80, CD86, CD134, CD137 and CD154, or